

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
30 January 2003 (30.01.2003)

PCT

(10) International Publication Number
WO 03/008048 A1

(51) International Patent Classification⁷: **A63B 53/16**

(21) International Application Number: PCT/NZ02/00123

(22) International Filing Date: 15 July 2002 (15.07.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
512998 18 July 2001 (18.07.2001) NZ

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Place, 2351 Cambridge (NZ).

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK,
TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

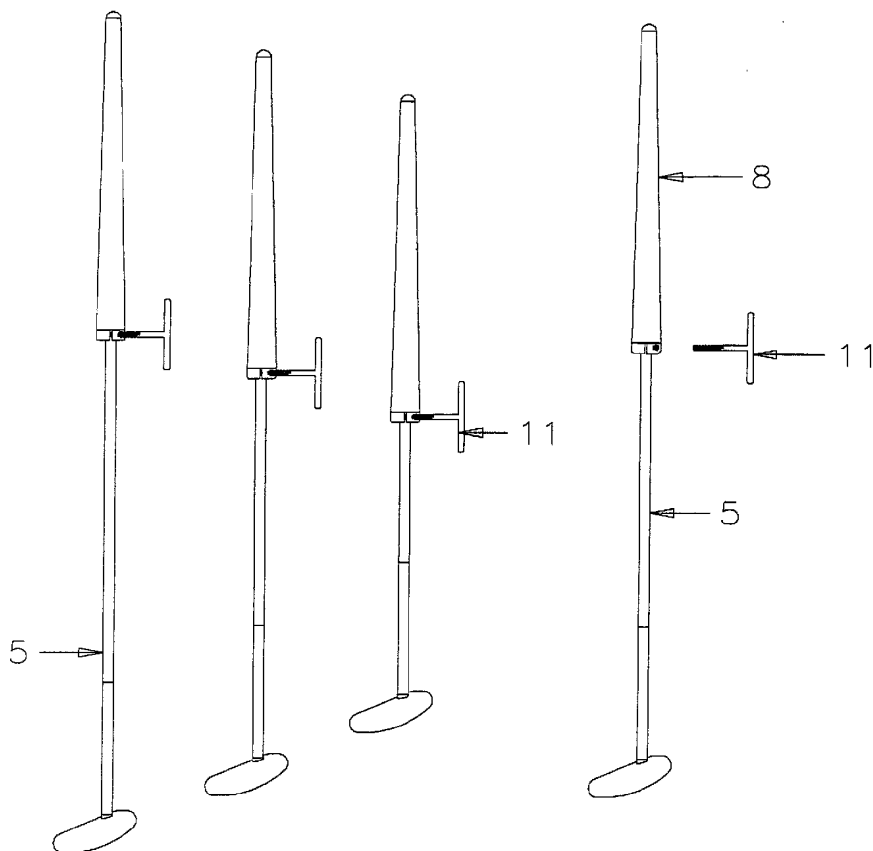
Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

(54) Title: ADJUSTABLE LENGTH GOLF PUTTER WITH SELF LOCKING DESIGN



(57) Abstract: A putter, adjustable in length to suit the golfer's stature and preferred posture, which utilises a self locking design to secure the putter, and necessitates a tool to adjust the length of the putter.



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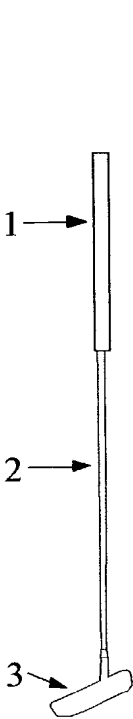


FIG. 1

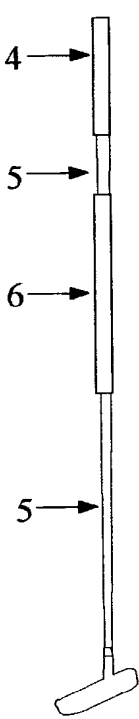


FIG. 3

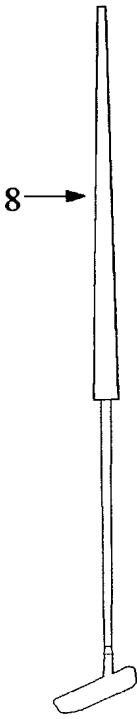


FIG. 5

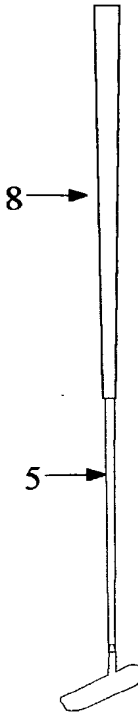


FIG. 6

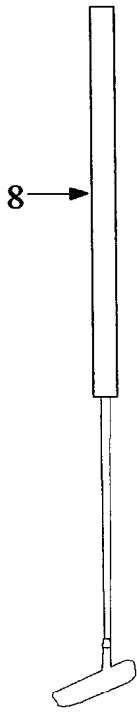


FIG. 7

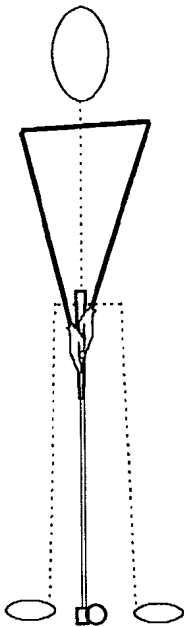


FIG. 2

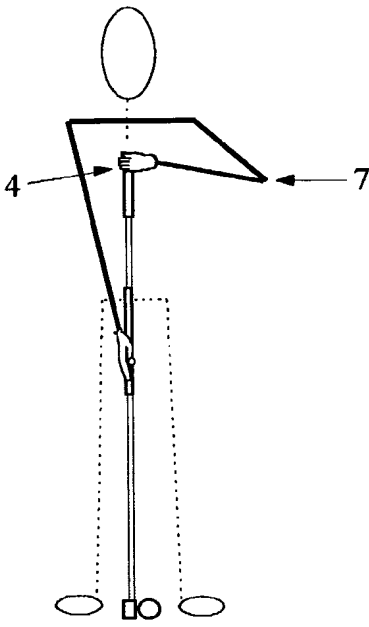


FIG. 4

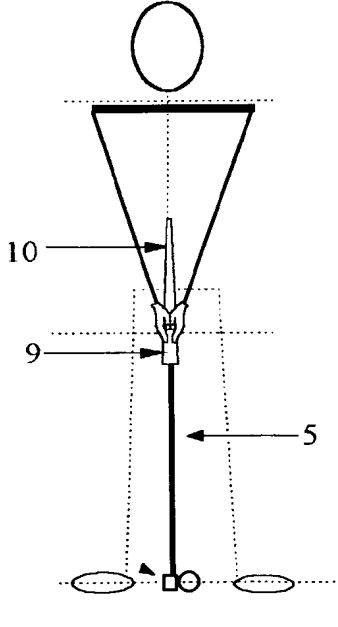


FIG. 8

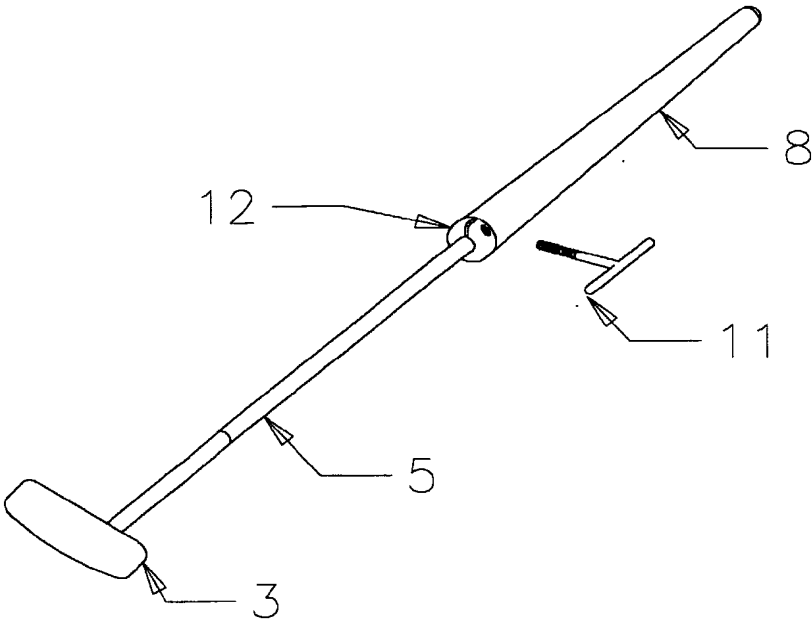


FIG. 9A

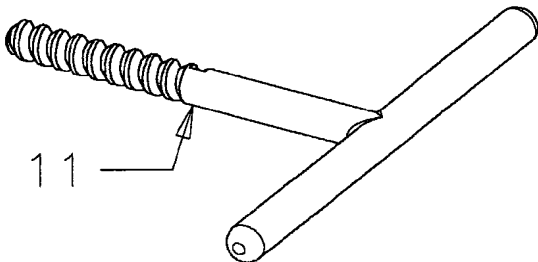


FIG 9C

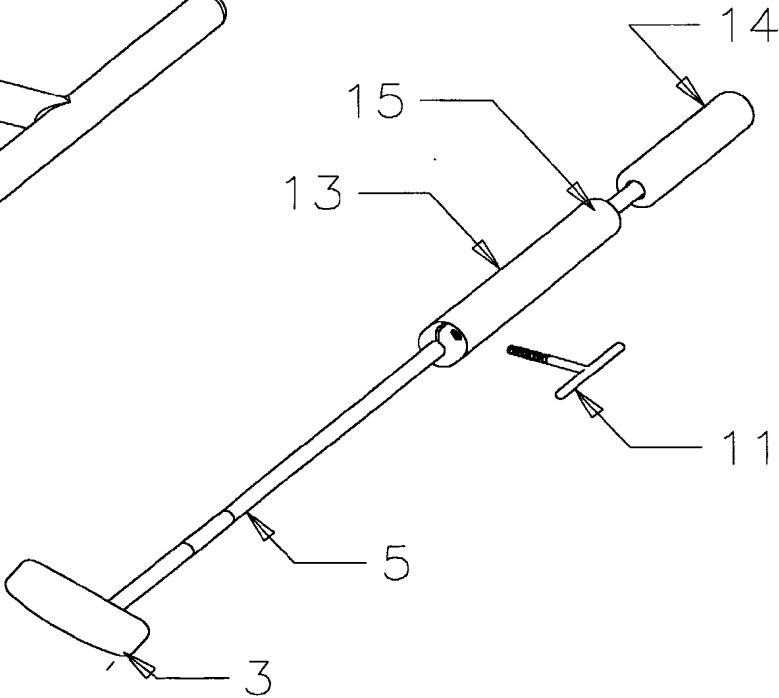


FIG. 9B

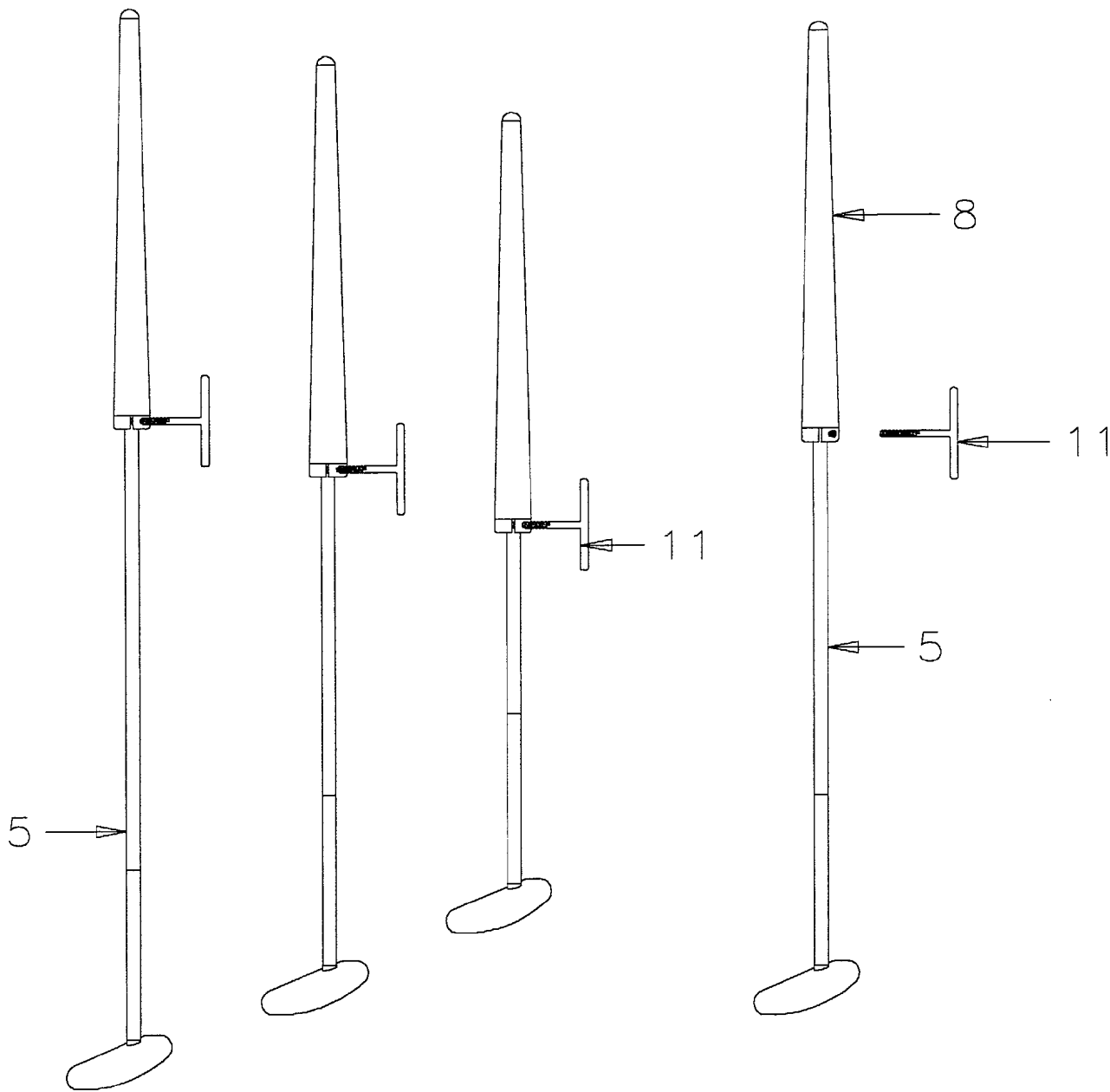


FIG. 10

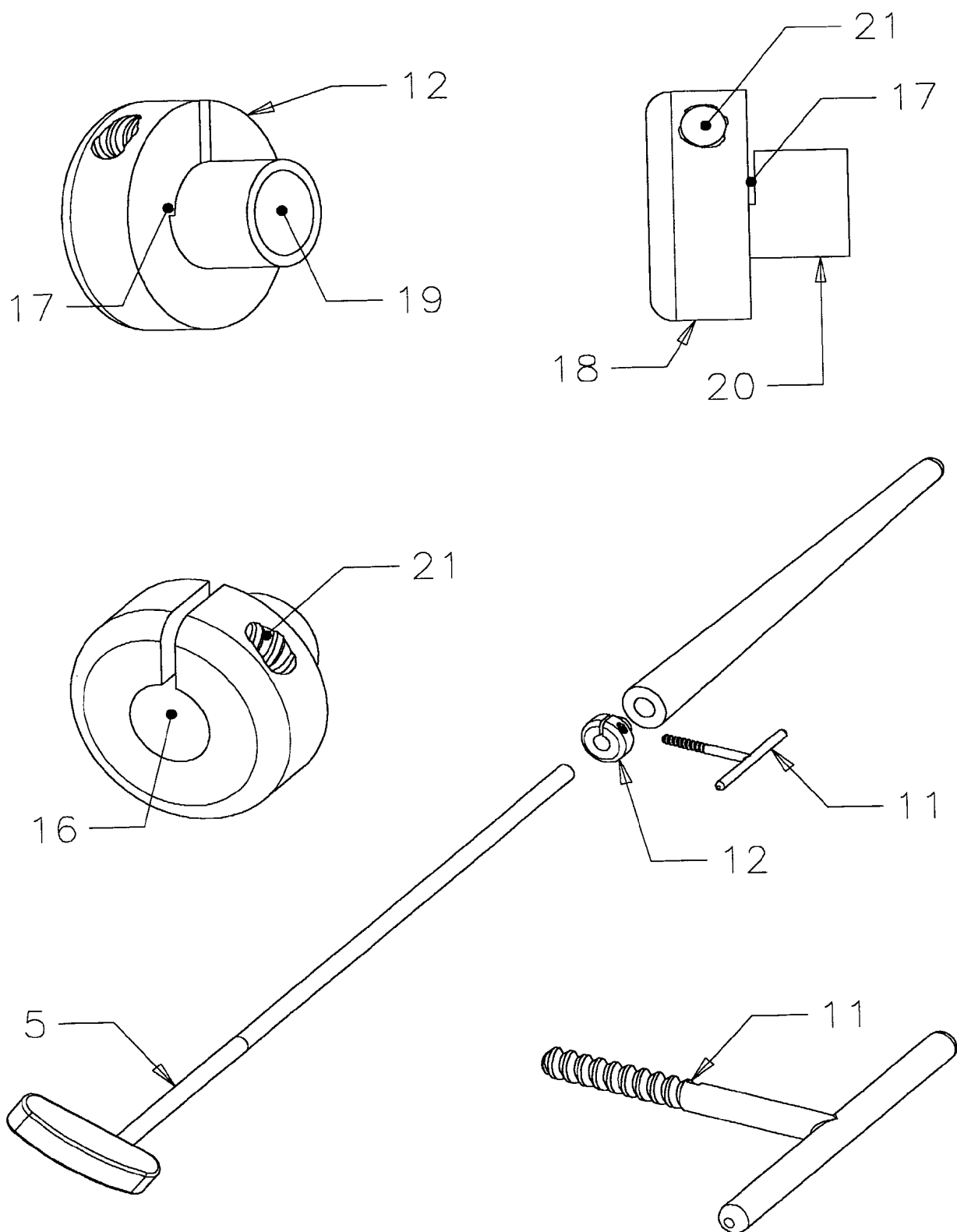


FIG. 11

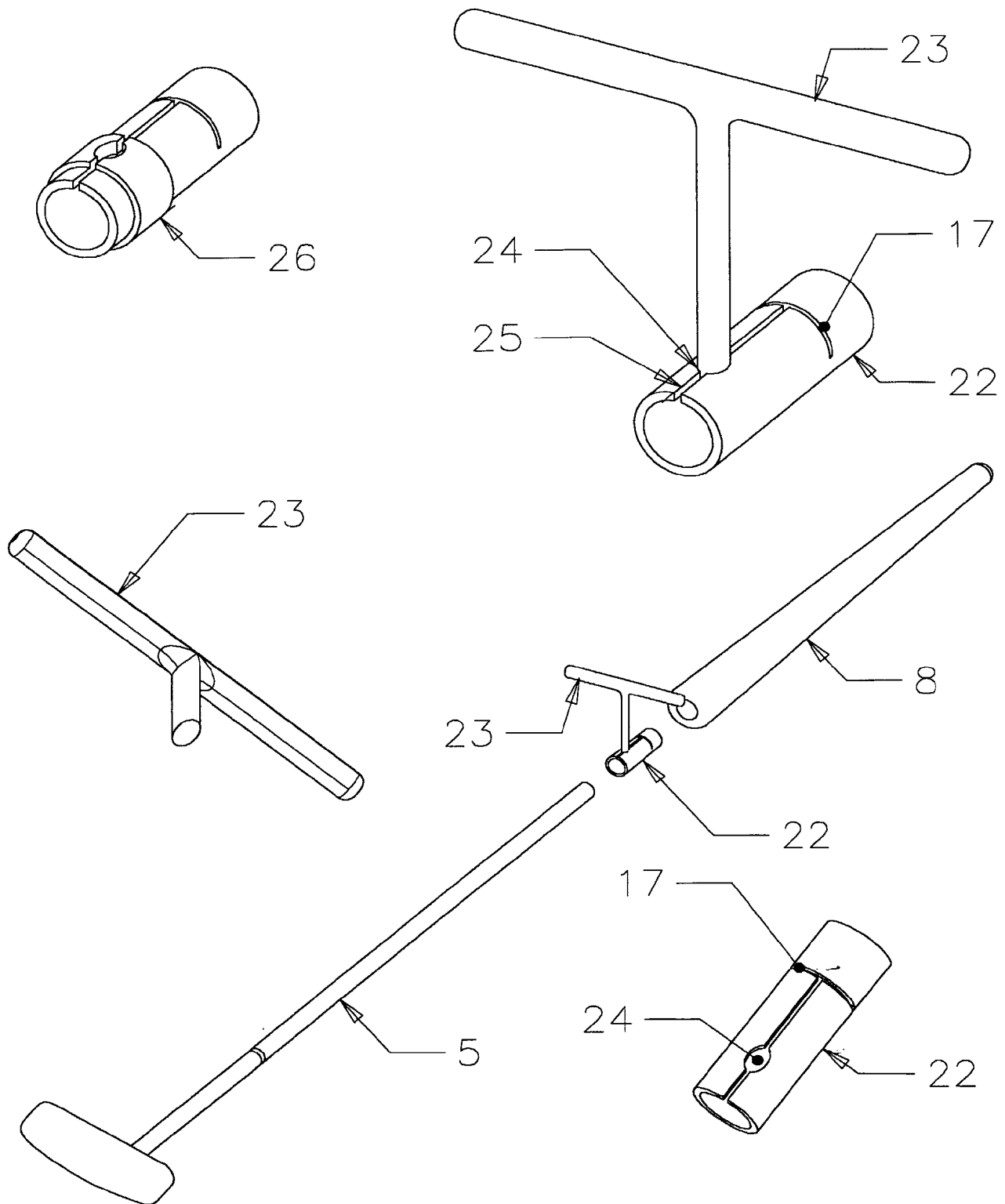


FIG. 12

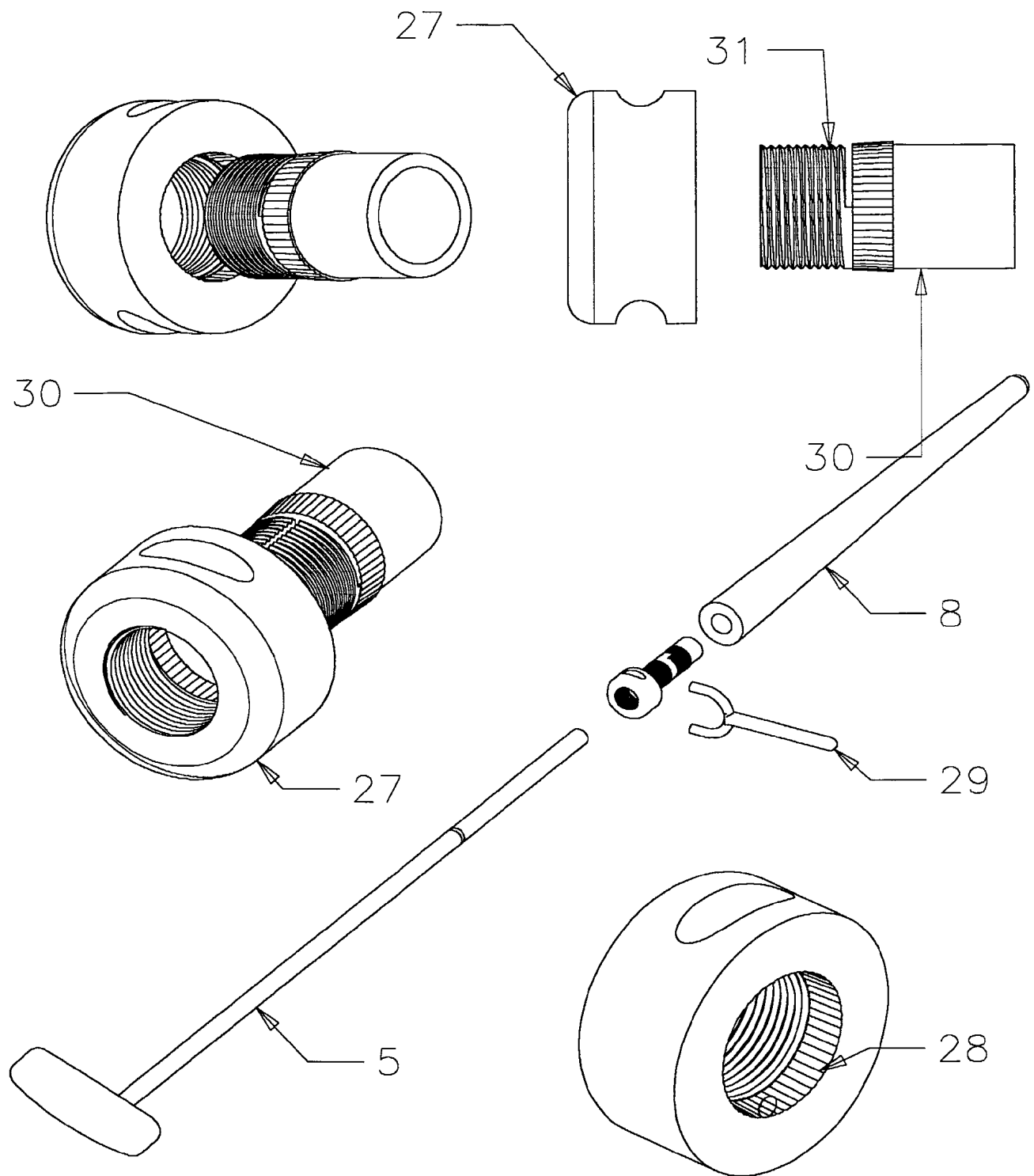


FIG. 13

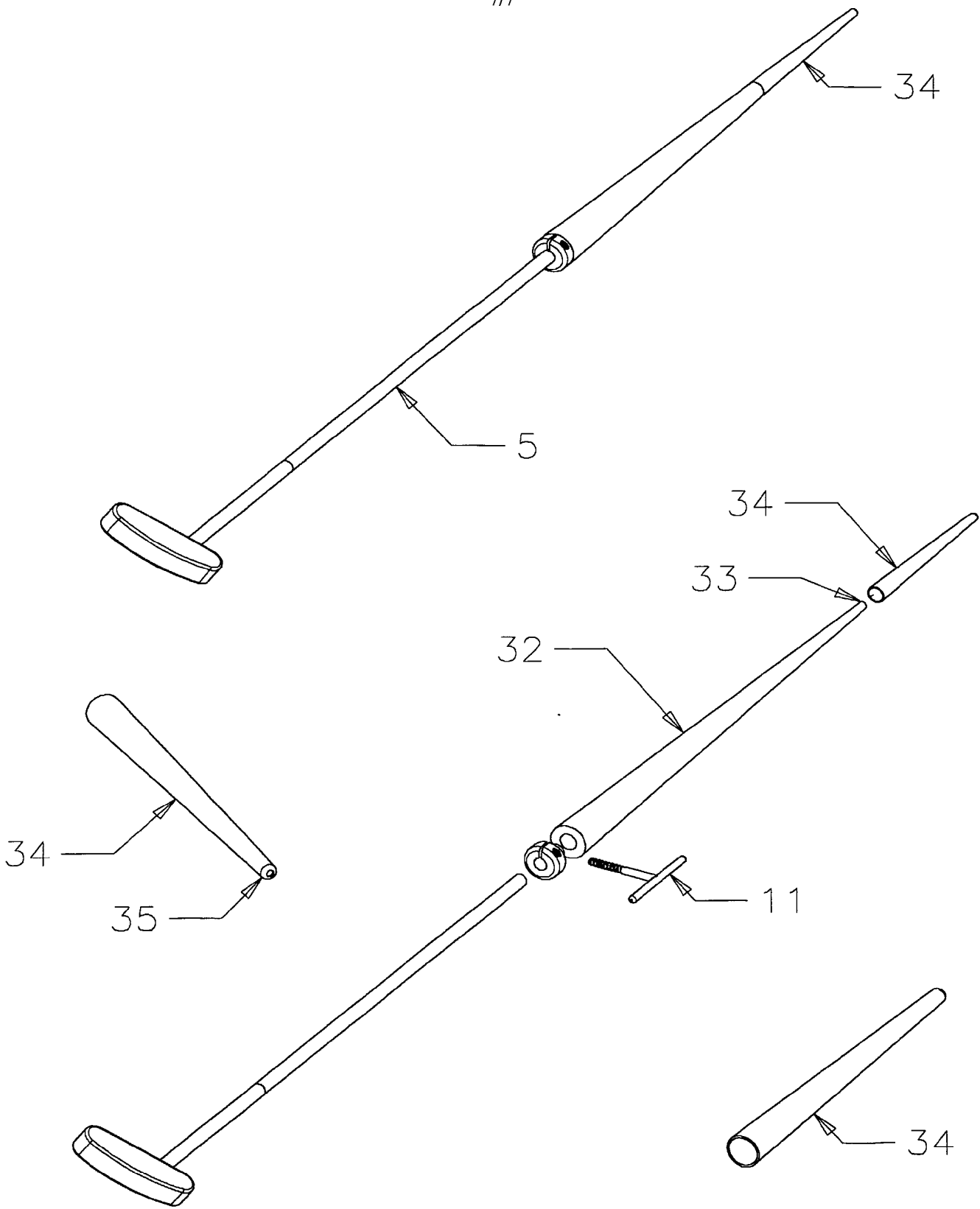


FIG. 14

Title: Adjustable Length Golf Putter With Self Locking Design

Cross Reference To Related Applications: Moore, US Patent 6,213,891

Statement regarding Federally Sponsored research or Development: Not Applicable

Reference To a Microfiche Appendix: Not Applicable

Background of the Invention:

Golf has become a popular recreational game. In the game of golf a ball is played from the teeing ground to the putting green by successive strokes, and once on the putting green into the hole, using a specialised club called a putter.

A conventional short putter (FIG.1) is between 85 and 90 cm. in total length, and has a single grip **1**, located at the top end of the shaft **2**. The player grasps the single grip with both hands (FIG.2) when putting the ball with the putter head **3**.

Whilst the use of a putter is an apparently simple action, it is perhaps the part of golf which is least reliable from day to day. A common problem that golfers experience when putting is excessive wrist flexure, or hinging of the wrists, when swinging their putter, which contributes to inconsistency of both direction and distance control.

An extreme form of poor putting is a condition known as the "yips", whereby the golfer has greatly excessive wrist flexure in his/her stroke, sometimes accompanied by excessive body movement as well. It has been known for golfers suffering from the putting "yips" to occasionally even miss the ball completely.

Many famous golfers, including Sam Snead, Ben Hogan, Bernhard Langer, and Tom Watson have had periods of very unreliable short distance putting, using conventional short putters.

To improve their putting some golfers are no longer using a conventional short putter, and are now using a long putter (FIG.3) in a simple pendulum type putting action, or a belly putter, which is a mid-length putter which hinges from the belly button.

As such there are now three distinct types of putter: short, mid. (or belly), and long

A long putter is between 120 and 130 cm. in total length, and has two grips, an upper grip **4**, located at the top end of the shaft **5**, and a lower grip **6**, below it on the shaft. The player grasps the upper grip with one hand when putting the ball, and this

upper hand is stabilised against the body, usually the chest (FIG.4), or chin, and remains relatively stationary during the putting stroke. The other hand grips the lower grip 6, providing the force to hit the ball, and the putter is pivoted with this lower hand from a pivot point in the approximate area of the upper hand.

The long putter is sometimes difficult to transport as it is too long for many car trunks. Therefore it would be an advantage if a long putter was adjustable for length so the golfer could alter the length to shorten the putter for ease of transportation.

Also when using the long putter, (FIG 4.), the golfer draws attention to the use of this putter, as one elbow 7, sticks out. This ungainly looking method can cause the golfer embarrassment.

Putters may have a single short grip (FIGS. 1 and 2), a pair of short grips (FIG. 3), or single long grip 8, with various tapers (FIGS. 5 and 6), or no taper (FIG. 7).

In late 1999 a well known professional golfer called Paul Azinger began using a mid length putter which is long enough to fit into his belly button when assuming the normal putting posture. A belly putter has one or two grips. This method has become known as belly putting, and in the last two years has grown in popularity with four golfers in the top fifty of the world rankings now using a belly putter.

Belly putters are commercially available in various fixed lengths from 100 to 115 cm.

There is a link to companies selling belly putters on the web site <http://www.bellyputter.com>.

It would also be an advantage if a belly putter was adjustable for length, so the golfer could alter the length to suit their desired posture, and that this adjustment was conforming to the Rules of Golf, as determined by the United States Golf Association [™], and the Royal and Ancient Golf Club of St. Andrews [™].

In 2000, Dave Pelz, a well respected golf instructor, and coach to many world ranking professionals, published a golf instructional book called "The Short Game Bible" (Broadway Books, New York, 2000). Mr Pelz noted that to avoid adopting a weak and unstable wrist position at the address position it is advisable to use a shorter putter than is currently available.

Short putters are commercially available only in various fixed lengths from 80 to 90 cm.

Therefore it would also be an advantage if a short putter was adjustable for length so the golfer could alter the length to suit their desired posture.

Telescoping golf shafts are described in patents, and the following patents represent the approaches to securing the shafts.

Middleton, US Patent 5,733,203, describes a telescoping putter, with 2 shafts, with a “locking screw” to secure the shaft.

Harrison, US Patent 5,649,870, describes a telescopic shaft arrangement where simple friction secures the two telescoping tapered shafts in a semi fixed position.

Mazzocco, U.S. Patent 4,674,747 discloses a golf club having adjustable length shaft retractable between fully extended and collapsed positions. The golf club has plural concentric telescopic interlocking tubular sections which produce a friction lock between the tubular sections in a fully extended position. There is a club commercially available utilizing this principle (<http://www.allinonegolfclub.com>).

Sundin, US Patent 5,584,769, describes a shaft which can be constructed of two or more telescopically-adjustable or collapsible members to allow the same to adjust to different lengths for individual golfers. However, Sundin does not specify how the two shafts are to be secured in position.

Lee, US Patent 5,569,096, describes “the shaft inserted into the handle, threadably tightening a locking nut over a flexible ring and a external thread until the flexible ring is squeezed over the shaft prevents the shaft from slipping--thereby effectively locking the shaft in the desired length.”

Napolitano, US Patent 5,282,619, describes a shaft which has a number of telescopic sections where a locking nut and a compression ring permit adjacent sections of the telescopic section to be locked in a fixed position relative to each .

Whilst all the above patented inventions technically allow adjustment none are both variable in length and in accordance with the Rules of Golf.

The Rules of Golf do not allow readily made adjustment to clubs, and until May 2002 an adjustable length putter has never been determined as legal by the United States Golf Association.

18pars Ltd, a company in which the applicant is a shareholder, is in receipt of a letter from the United States Golf Association TM, which states “the default-locked mechanism submitted has been judged conforming with the Rules of Golf.” (letter from the United States Golf Association, April 2002, Decision 2002-185).

This is the first time ever that a length adjustable putter has been approved. The United States Golf Association TM has decided the default locked mechanism submitted

can not be inadvertently, or secretly adjusted by the golfer during the play of a round of golf.

A mechanism which is conforming for belly putters is also likely to be judged conforming for regular shorter putters. Whilst not as critical as for belly putters, it is nevertheless advantageous to be able to customise the length for all types of putters, to suit the golfer's physique, and preferred posture when putting.

Brief Summary of the Invention:

A putter, adjustable in length to suit the golfer's stature and preferred posture, which, utilises a self locking fixing mechanism to secure the putter, that necessitates a tool to adjust the length of the putter. Without the tool the putter length is fixed.

A self locking fixing mechanism is defined as a mechanism which, by default, locks or fixes the components of the putter relative to each other, and is secure enough so that it requires a tool to loosen the components, and thereby adjust the length of the putter.

In the detailed description and drawings that follow three self locking mechanisms are described by way of example. These are a self locking collet , a self locking split tube, and a self locking threaded fitting with frictional internal ribs.

Brief Description Of Several Views Of the Invention:

FIG. 1 is a conventional short putter with a short grip.

FIG. 2 shows the method of using a conventional short putter, grasping the single grip with both hands .

FIG. 3 is a long putter as currently available, with two spaced short grips.

FIG. 4 shows the method of using a long putter as currently available.

FIG. 5 is a long putter with a single long grip, which tapers so that the cross section of the grip is greater towards the putter-head end.

FIG. 6 is a long putter with a single long grip, which tapers so that the cross section of the grip is greater towards the belly button end, when in use.

FIG. 7 is a long putter with a single long grip, which has no taper.

FIG. 8 shows the method of using a belly putter.

FIG. 9a is an adjustable length putter with a single grip.

FIG. 9b is an adjustable length putter with two grips.

FIG. 9c is a threaded adjusting tool.

FIG. 10 shows a telescoping putter in various lengths, and with the adjusting tool removed.

FIG. 11 is a self locking collet mechanism, with adjusting tool.

FIG. 12 shows a self locking split shaft mechanism in two variations, with adjusting tools.

FIG. 13 is a self locking threaded fitting with frictional internal ribs, with adjusting tool.

FIG. 14 shows the end cap detail of a reverse taper self locking adjustable length putter.

Detailed Description of the Invention:

This invention describes an adjustable length putter, which is legal for play, with one or two grips (FIGS. 9a/b), which may be re-positioned up and down the shaft **5**, in a variety of positions (FIG. 10), and secured in place to suit the golfer's stature and preferred posture.

There may be one grip **8**, of any length, which is on a shaft underneath it to support it, or there may be two grips **13/14**, which are both on a second shaft **15**.

Alternatively the lower grip **13** may be on the shaft **5** which connects to the putter head, but the upper grip **14** is on the upper shaft **15**.

The two key features of this invention are that the putter length is self locked by default, and the adjustment can not be made without a tool **11**.

A self locking fixing mechanism is defined as a mechanism which, by default, locks or fixes the components of the putter relative to each other, and is secure enough so that it requires a tool to loosen the components, and thereby adjust the length of the putter.

There are three components to a putter, the putter-head, shaft, and grip, and this invention relates to adjustment of the relative positions of the shaft and grip.

The grip may be either a structurally rigid unit of itself, (perhaps 'plastics' and or metals), or merely a grip which is supported by a rigid internal member such as a golf shaft. In this case there would be an inner (lower) shaft and an outer (upper) shaft, with an internal diameter which is greater than the outer diameter of the inner shaft.

This would allow the length of the putter to be adjusted by these two telescoping shafts, with the outer shaft being secured to the inner shaft.

Alternatively where the grip is a structural rigid unit itself, this grip may be secured in position on the shaft directly.

In the detailed description that follows three self locking mechanisms are described. These are a split-collet (FIG.11), a split-tube (FIG.12), and a threaded collet with frictional internal ribs (FIG.13).

A self locking split-collet (FIG.11) is a device which has an internal diameter **16** smaller than the outer diameter of the shaft **5** it is designed to lock on. This difference in diameter is typically in the range of 0.05mm. to 0.5mm.

There is a slot **17**, which allows the self locking split-collet to be varied in internal diameter **16** at the larger external diameter end **18** of the collet, but to have a constant internal diameter **19** at the smaller external diameter end **20** of the collet.

By rotating the threaded tool **11** into the threaded hole **21** the golfer can loosen the split-collet **12** and attached grip **8** to alter the length of the putter(FIG.10).

The grip is attached to the top end of the tool **20**, and to allow free movement of the grip over the shaft **5** has an internal diameter **19** which is greater the shaft **5**.

A variation of the split-collet could use a tapering-collet much like that which holds a router bit in an electric woodworking router.

A second mechanism which is self locking is a split-tube **22**. This mechanism (FIG.12) is similar to the split-collet (FIG.11), but is slender in character and tends to operate on the shaft **5** with less force but over a longer distance.

Being slender a self locking split-tube allows a standard putter grip to be used, and lends itself well to being designed as a product sold for regular putters, either to have them configured as an adjustable belly putter or more likely as an adjustable short putter.

The split-tube itself may be a modified drawn or extruded tube, or similar, or a cast, injection moulded, or machined component.

The tool to adjust the putter could utilise a thread as in the split-collet, but a simple design is the use of a tool **23** which is oval **24** in cross section. The tool fits neatly into a similarly oval cross section hole in the lower slot **25** of the split-tube. When the tool is used it is rotated through up to 90 degrees to open up the slot **25** and loosen the split-tubes grip on the shaft **5**.

An alternative tool would not need there to be an oval hole **24** in the slot **25** but could separate the slot **25** by two parts of the tool moving apart, after having been inserted in the slot.

To provide sufficient surface area for these tools to work on the split-tube it may be advantageous for there to be localised thickening **26** in the split-tube mechanism.

A further variation of the split-tube mechanism could be used to alter the length of the shaft itself **5**. In this example the shaft **5** would be made up of a pair of telescoping shafts, the upper with one or two grips on it, and the mechanism would serve to lock the two shafts in position, rather than to lock a grip in position. This mechanism would also be self locking to meet the requirements of the Rules of Golf.

A third mechanism (FIG.13) which is self locking is a threaded collet **27** with frictional internal ribs **28**. There are corresponding external frictional ribs **29** on the outside of the inner tool **30**.

Initially the collet can be turned by hand, but before the inner tool **30** locks onto the shaft **5** it is necessary to use a tool **31** to apply leverage so the collet is able to continue turning and decrease the internal diameter of the inner tool **30**.

The method of securing either the rigid grip, or the outer shaft, to the inner (lower) shaft may involve a mechanical device which reduces the internal diameter of either the rigid grip (over some or all of its length), or of the outer shaft, (over some or all of its length), so that a friction fit occurs to the inner shaft.

A preferred embodiment is an adjustable length putter with a reverse taper single grip. The applicant for this patent holds US Patent 6,213,891, which claims a reverse taper putter grip **32** over 350mm in length (FIG.14). A reverse taper grip is slender at the top in the area where it engages with the belly button **33**, and this grip would therefore fit comfortably into the navel, or belly button. However with its smaller cross section a reverse taper grip is prone to damage at this slender end. To strengthen the grip at this slender end it is advantageous if the end of the grip were made more durable, and supported by an outer durable end cap **34**. This end cap would be made of metal or another rigid material, and may have a drainage hole in the smaller end **35**. The end cap may be a simple taper as shown or parallel along its length. This end cap will typically be from 10 to 200mm in length.

Where two grips are used (FIG.9b), it is preferable the upper grip **14** is slender in cross section, and the use of an end cap would strengthen this end.

Whilst continuous length adjustment is practical with the aforementioned mechanisms, it may be advantageous to use a step wise variation using perhaps a method commonly found in telescopic walking sticks or telescopic tent poles. A domed button, which operates radially outwards, near the top of the shaft **5**, engages one of a sequence of holes which run length wise with in the structure of the grip **8**. Step wise adjustment may be preferred by golfers as one can easily try various lengths and go back to former lengths to compare.

The method of securing the telescoping elements may alternatively involve the action of an Allen key or similar tool which acts one or more grub screws or other fixing devices which effectively reduce the diameter of the outer shaft or an attached or integral fixing device, thereby causing a friction fit to occur on the inner shaft.

An essential feature of the aforementioned mechanisms is that there are two shaft components, or a shaft component and a grip component, which are telescoping, and substantially parallel to each other, in the area where they telescope.

The fixing mechanism may be at either end of the lower grip **6** (FIG.3 and 9b) in the case of a two grip putter, and the putter may vary in the distance from the lower grip **6** and the putter head. Alternatively the distance between the lower grip **6** and the upper grip **4** may be varied, or indeed both distances may be variable with in one putter.

Any of the mechanisms may be designed to be used on regular putters which are commonly parallel in the upper 25cm. The internal diameter of the mechanism will need to be slightly smaller than the shaft it is to clamp onto.

Aspects of this present invention have been described by way of example only and it should be appreciated that modifications and additions may be made without departing from the scope thereof.

Claims:

I claim:

1. A golf putter, of adjustable length which is self-locking in design, and requires a tool to loosen the components to adjust the length.
2. A golf grip, or a pair of golf grips, designed to be placed on a golf shaft, self-locking in design, and requiring a tool to loosen the grip or grips to adjust the length of the putter.
3. A pair of shafts which are able to telescope, secured by a self locking mechanism, and requiring a tool to loosen the shafts to alter the total length.
4. A golf putter as in claim 1 with one or two grips.
5. A golf putter as in claim 1 with one or two grips which are rigid structural entities in themselves.
6. A golf putter as in claim 1 with one or two grips which are not rigid structural entities in themselves, but are on a rigid shaft or support structure .
7. A golf putter as in claim 1 where the length adjustment is step wise.
8. A golf putter as in claim 1 where the length adjustment is continuous.
9. A golf putter as in claim 1 with a self-locking collet mechanism.
10. A golf putter as in claim 1 with a self-locking tube mechanism.
11. A golf putter as in claim 1 with a self-locking internal resistance device.
12. A golf putter as in claim 1 with two shaft components which are telescoping, and substantially parallel to each other, in the area where they telescope.
13. A golf putter as in claim 1 with a shaft component and a grip component, which are telescoping, and substantially parallel to each other, in the area where they telescope.
14. A golf putter as in claim 1 with an outer rigid end cap.
15. A golf grip or pair of golf grips as in claim 2 with an outer rigid end cap, at the grip end which engages with the navel.

INTERNATIONAL SEARCH REPORT

 International application No.
PCT/NZ02/00123

A. CLASSIFICATION OF SUBJECT MATTER		
Int. Cl. ⁷ : A63B 53/16		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) See electronic search below		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI: A63B 53/IC and keywords: club telescope extend height adjust and like terms		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 024 438 A (CANDOW) 18 June 1991 column 3 lines 33 to 45 figure 2	1-6, 8, 11-15
X	GB 2 309 389 A (BATE) 30 July 1997 page 6 line 25 to page 8 line 3 figure 1	1-6, 8, 11-15
X	US 3 539 185 A (ANDIS) 10 November 1970 column 2 lines 15 to 35	1-8, 11-15
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Date of the actual completion of the international search 12 September 2002		Date of mailing of the international search report 20 SEP 2002
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929		Authorized officer SUE THOMAS Telephone No : (02) 6283 2454

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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Patent Document Cited in Search Report		Patent Family Member
US	5024438	NONE
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US	3539185	NONE
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